Vertex location in the MC

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Purpose and Goal

- The vertex position in the MC should resemble “real” neutrino interactions
- The z-distribution that is produced by the MC needs to be updated to properly reflect E/B modules

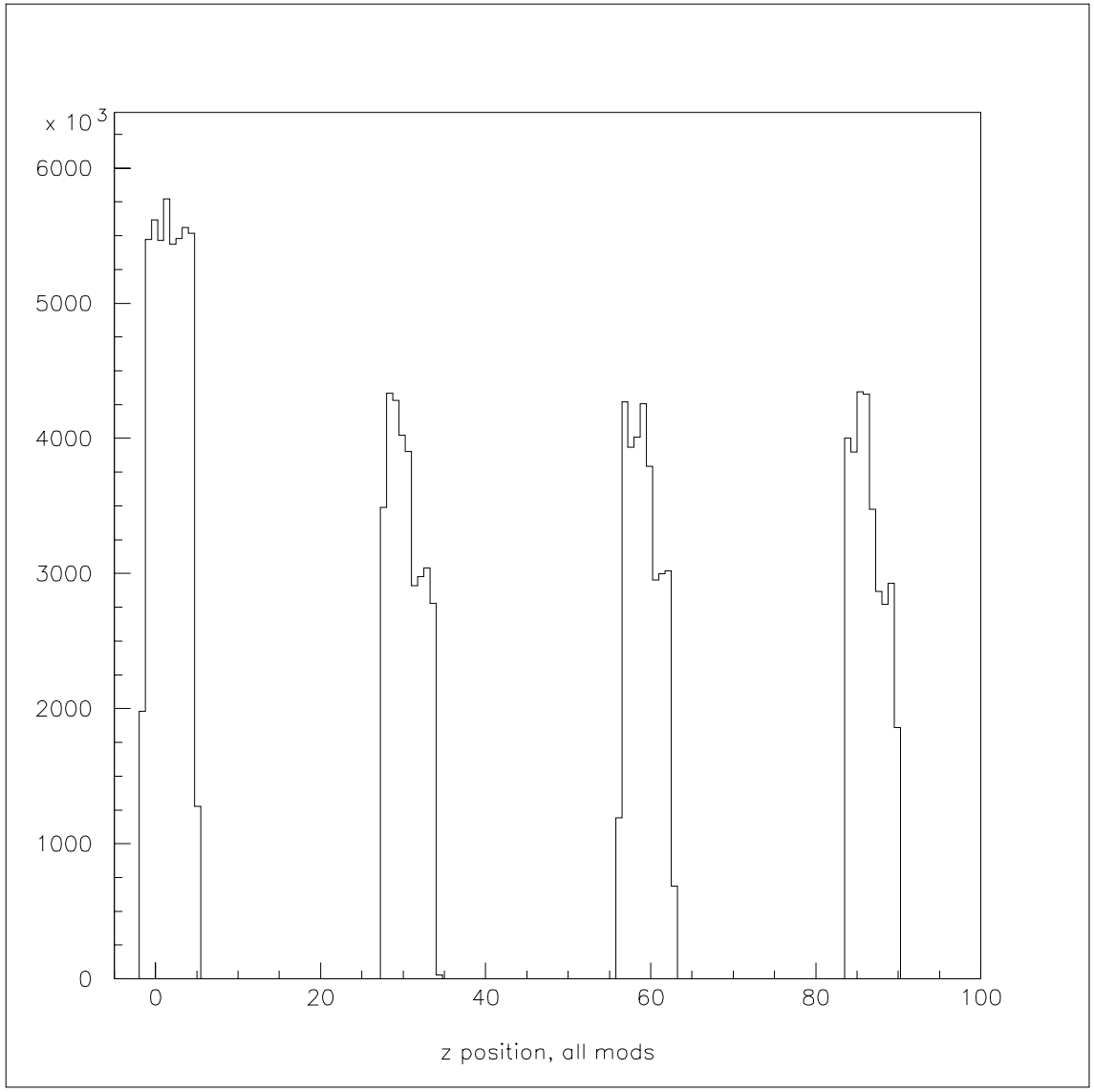
Method

- Find a vertex module
  - weighting based on total module mass
- Generate a random Z position within a module
  - weighting based on the density distribution

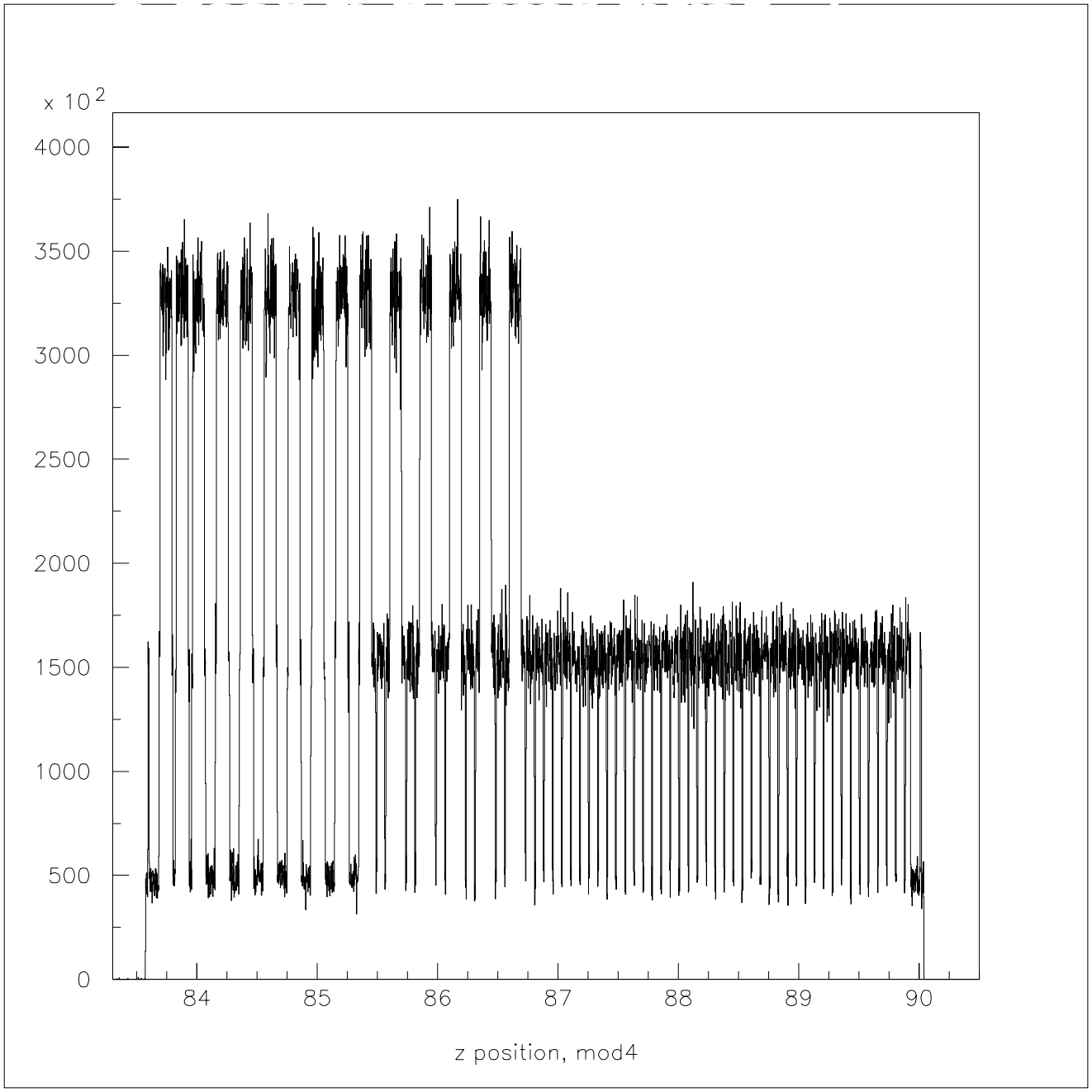
Plots

- Distribution of vertex Z position for period 3
  - all modules
  - module 4 (E/B4)
  - one ECC sheet in module 4

Period 3, all modules



ECC1 E/B2 E/B3 E/B4

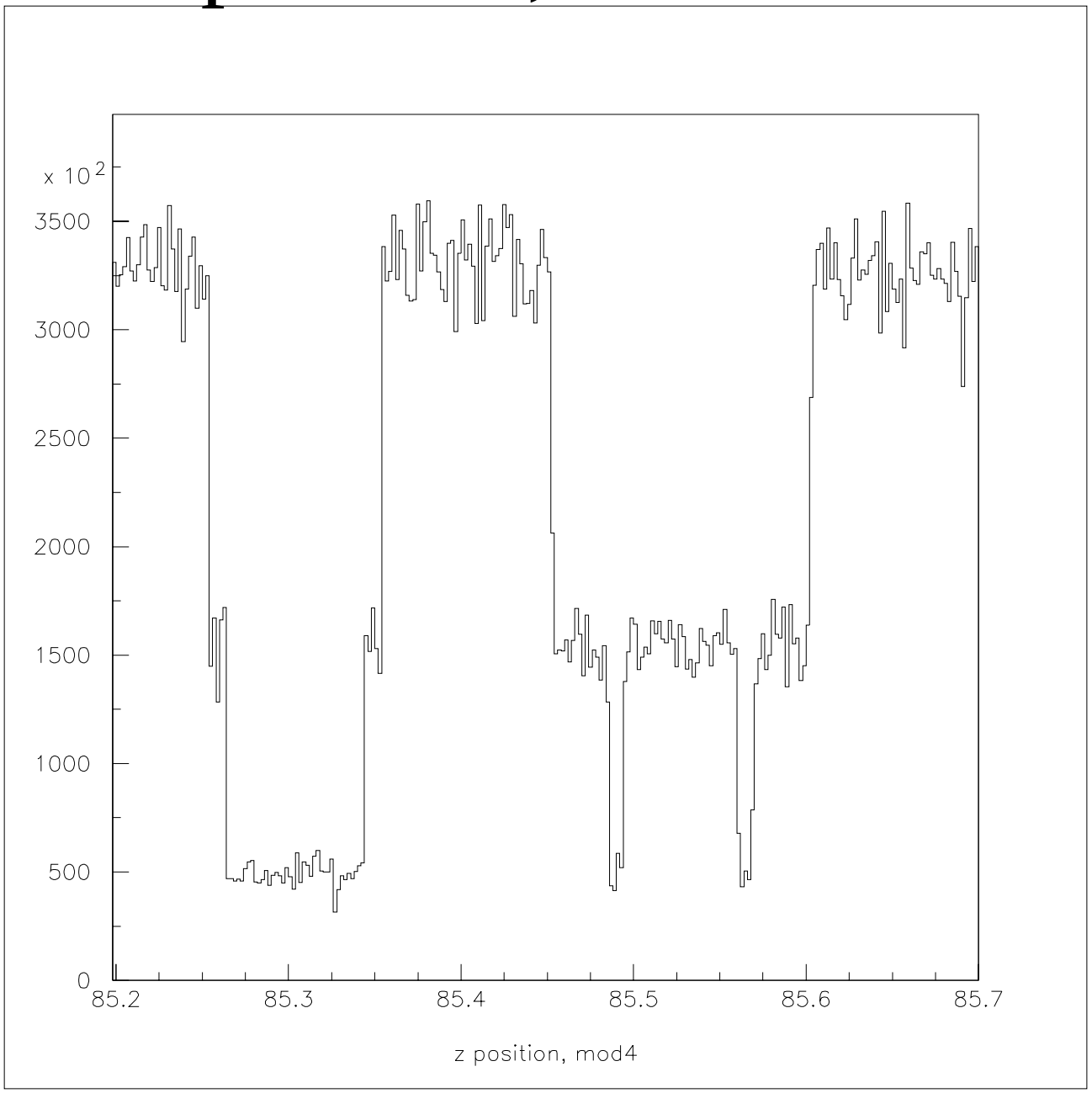

x 10 2
4000
3500
3000
2500
2000
1500
1000
500
0
84
85
86
87
88
89
90
z position, mod4

Also period 3, module 4

Iron

Emulsion

Base



Conclusion and Outlook

- The new vertex assignment algorithm generates the correct distribution in Z.
- It depends only on information in the geometry files and the total module weight

- This should be as much detail as we will ever need